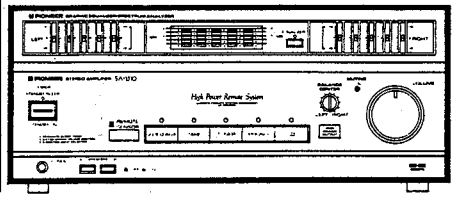
PIONEER®
The future of sound and vision.

Service Manual



ORDER NO.
ARP1786

STEREO AMPLIFIER

SA-1510
SA-1510S

SA-1510 AND SA-1510S HAVE FOLLOWING VERSIONS:

Type	Applicable model		Power requirement	Destination
	SA-1510	SA-1510S		
KUC	O	O	AC120V only	U.S.A. and Canada
SD	O	–	AC110V, 120V-127V, 220V, 240V (switchable)	Kingdom of Saudi Arabia and general market
SD/G	–	O	AC110V, 120V-127V, 220V, 240V (switchable)	U.S. Military

- **This manual is applicable to the SA-1510/KUC, SD, SA-1510S/KUC and SD/G types.**
- **The SA-1510S is the same as the SA-1510 except for remote control unit.**
- **For the SA-1510/SD, SA-1510S/KUC and SD/G types, refer to pages 23–38.**

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS, PACKING AND PARTS LIST 3
3. SCHEMATIC DIAGRAM 7
4. P.C. BOARDS CONNECTION DIAGRAM ... 11
5. ELECTRICAL PARTS LIST 19
6. FOR SA-1510/SD, SA-1510S/KUC AND SD/G TYPES 23
   - 6.1 CONTRAST OF MISCELLANEOUS PARTS 23
   - 6.2 REMOTE CONTROL UNIT (AXD1103) .. 25
     - 6.2.1 EXPLODED VIEWS AND PARTS LIST 25
     - 6.2.2 ELECTRICAL PARTS LIST 27
     - 6.2.3 SCHEMATIC DIAGRAM 29
     - 6.2.4 P.C. BOARD PATTERNS 30
   - 6.3 SCHEMATIC DIAGRAM FOR SA-1510/SD AND SA-1510S/SD/G TYPES 31
   - 6.4 P.C. BOARD PATTERNS FOR SA-1510/SD AND SA-1510S/SD/G TYPES 35
7. PANEL FACILITIES 39
8. SPECIFICATIONS 41

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

© PIONEER ELECTRONIC CORPORATION 1989

MO APR. 1989 Printed in Japan

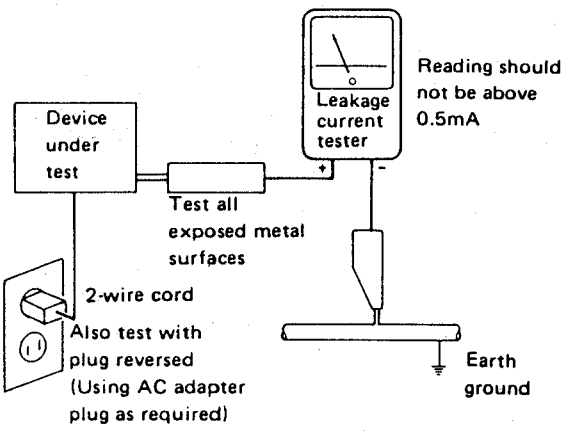
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

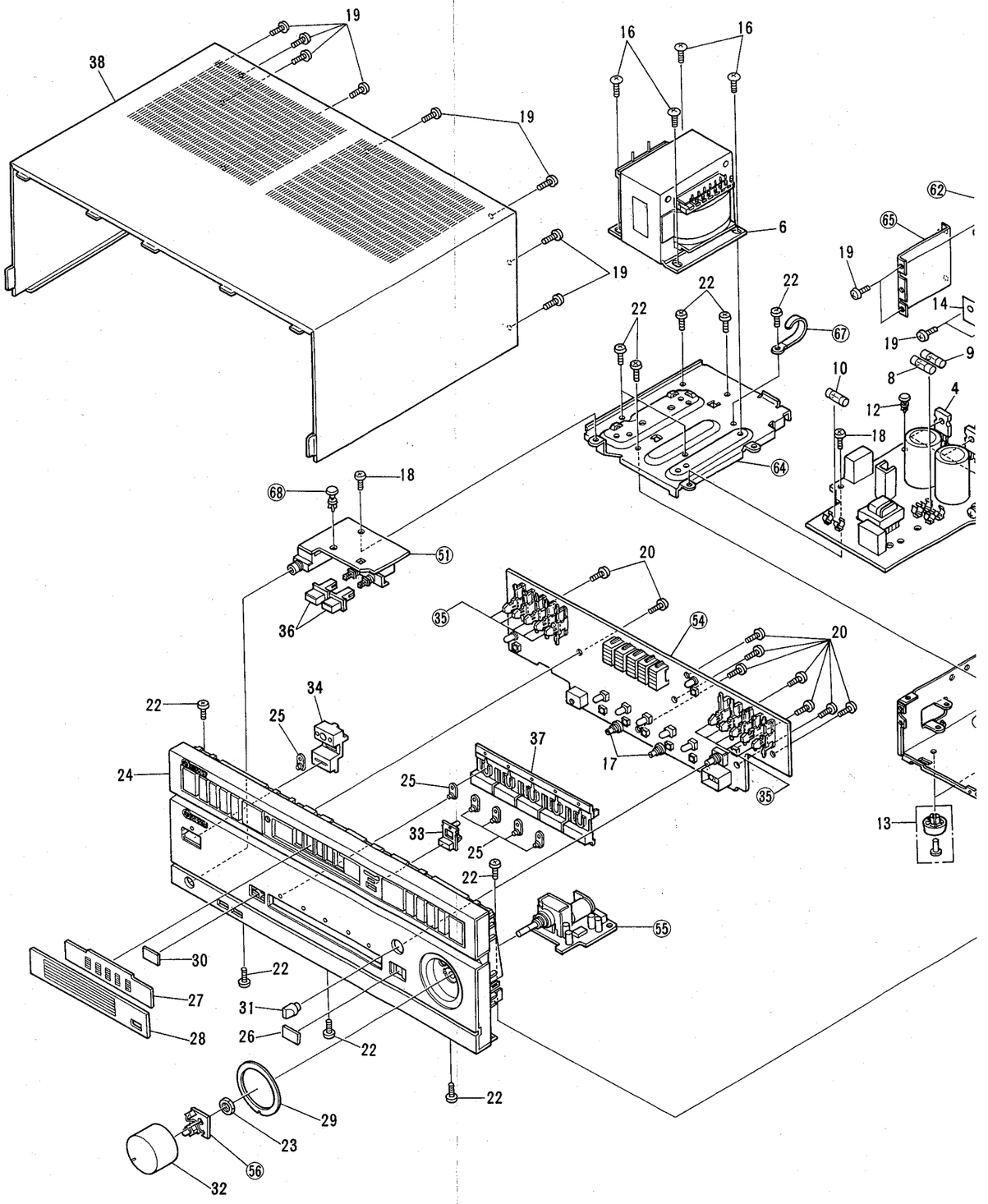
2. EXPLODED VIEW, PACKING AND PARTS LIST

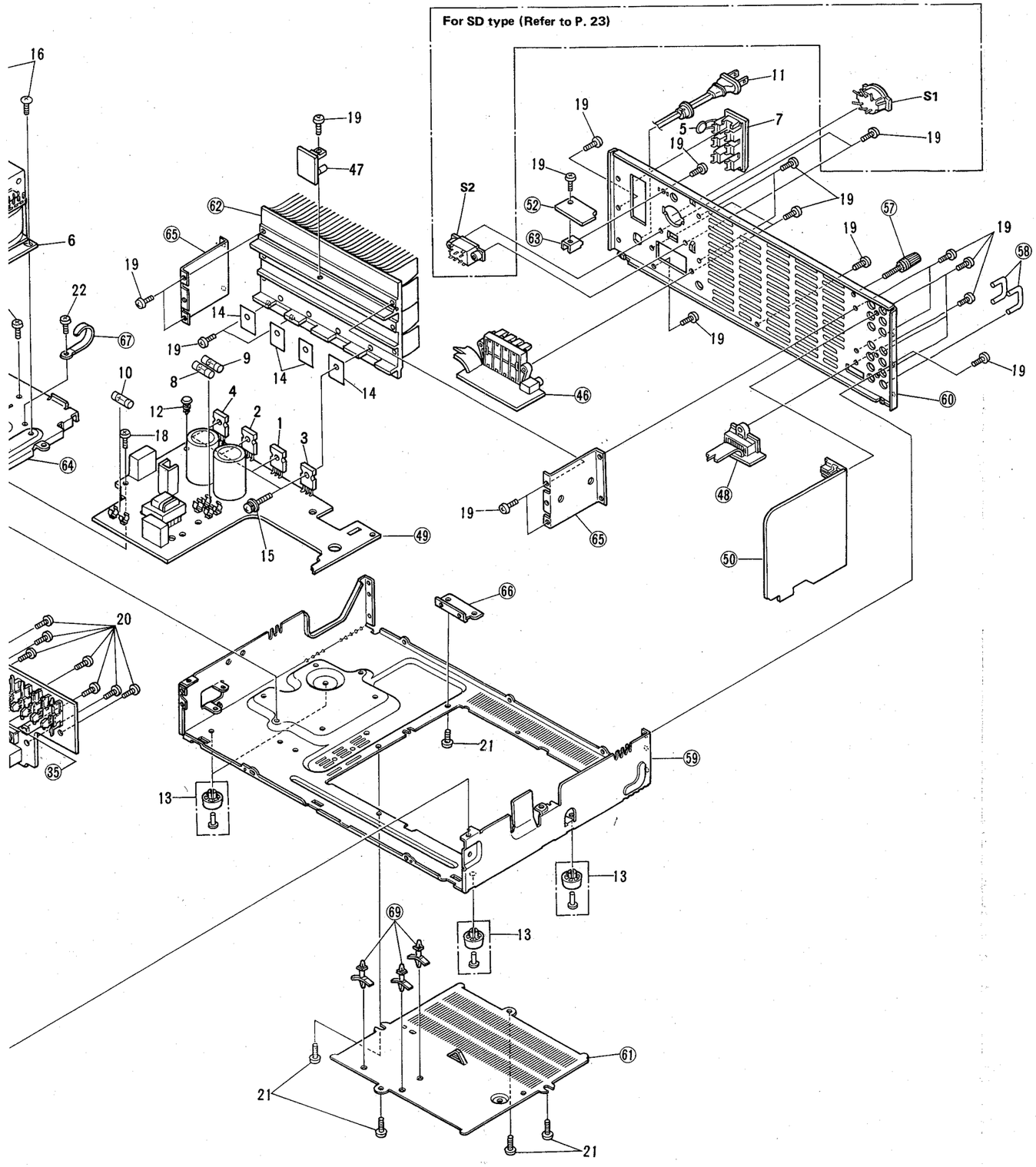
NOTES:

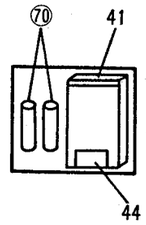
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

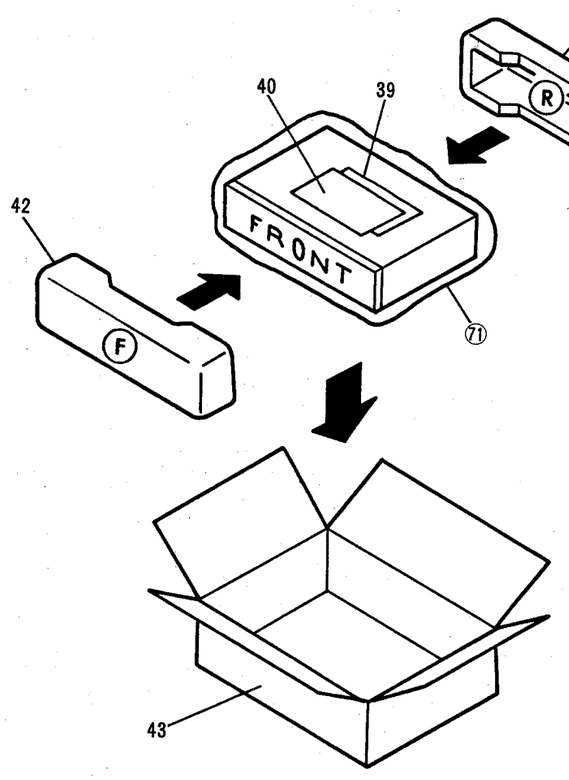
Parts List

Mark	No.	Part No.	Description
⚠	1	2SA1302	Transistor (Q3)
⚠	2	2SA1302	Transistor (Q4)
⚠	3	2SC3281	Transistor (Q1)
⚠	4	2SC3281	Transistor (Q2)
⚠	5	ACG1003	Capacitor (C1, 0.01/AC125V)
⚠	6	ATS1074	Power transformer (T1)
⚠	7	AKP-515	3P AC outlet
⚠	8	AEK-122	Fuse (FU3, 2A)
⚠	9	AEK-122	Fuse (FU4, 2A)
⚠	10	AEK-309	Fuse (FU1, 6.3A)
⚠	11	BDG1012	AC power cord
	12	AEC-510	Nylon rivet
	13	AEC-784	Leg ASSY
	14	AEE1014	Sheet
	15	ABA-258	Screw
	16	ABA1015	Screw
	17	ABA1026	Screw
	18	BBT30P080FMC	Screw
	19	BBT30P080FZK	Screw
	20	BBZ26P080FMC	Screw
	21	BBZ30P060FZK	Screw
	22	BBZ30P080FZK	Screw
	23	NK90FUC	Nut
	24	AMB1478	Front panel ASSY
	25	AAK1443	Lens
	26	AAK1667	PVC sheet
	27	AAK1668	PVC sheet A
	28	AAK1669	PVC panel
	29	AAK1670	Volume ring
	30	AAK1780	IR filter
	31	AAB1060	Rotary knob
	32	AAB1102	Rotary knob ASSY
	33	AAD1335	Muting button
	34	AAD1336	Power button
	35		Knob (PLASTIC)
	36	AAD1354	Push knob
	37	AAD1534	Function knob
	38	ANE1186	Bonnet
	39	ARB1160	Operating instructions (English)
	40	ARD1008	Operating instructions (English, For REMOCON)
	41	AXD1090	Remote control unit
	42	AHA1239	Pad
	43	AHD1594	Packing case
	44	ANZ1846	Battery cover
	45		.....
	46		OUTPUT ASSY
	47		IC ASSY
	48		CONNECTOR ASSY
	49	AWZ2368	AF ASSY
	50	AWZ2369	INPUT ASSY
	51		SP SW ASSY
	52		REMOTE ASSY
	53		.....
	54	AWZ2375	CONTROL ASSY
	55		VOL ASSY
	56		LED ASSY
	57		Terminal (GND)
	58		Jumper plug
	59		Chassis
	60		Rear panel
	61		Bottom plate
	62		Heat sink
	63		PCB holder
	64		Transformer frame
	65		Heat sink holder
	66		Heat sink holder
	67		Binder
	68		Pin grommet
	69		PCB spacer
	70		Battery
	71		Sheet

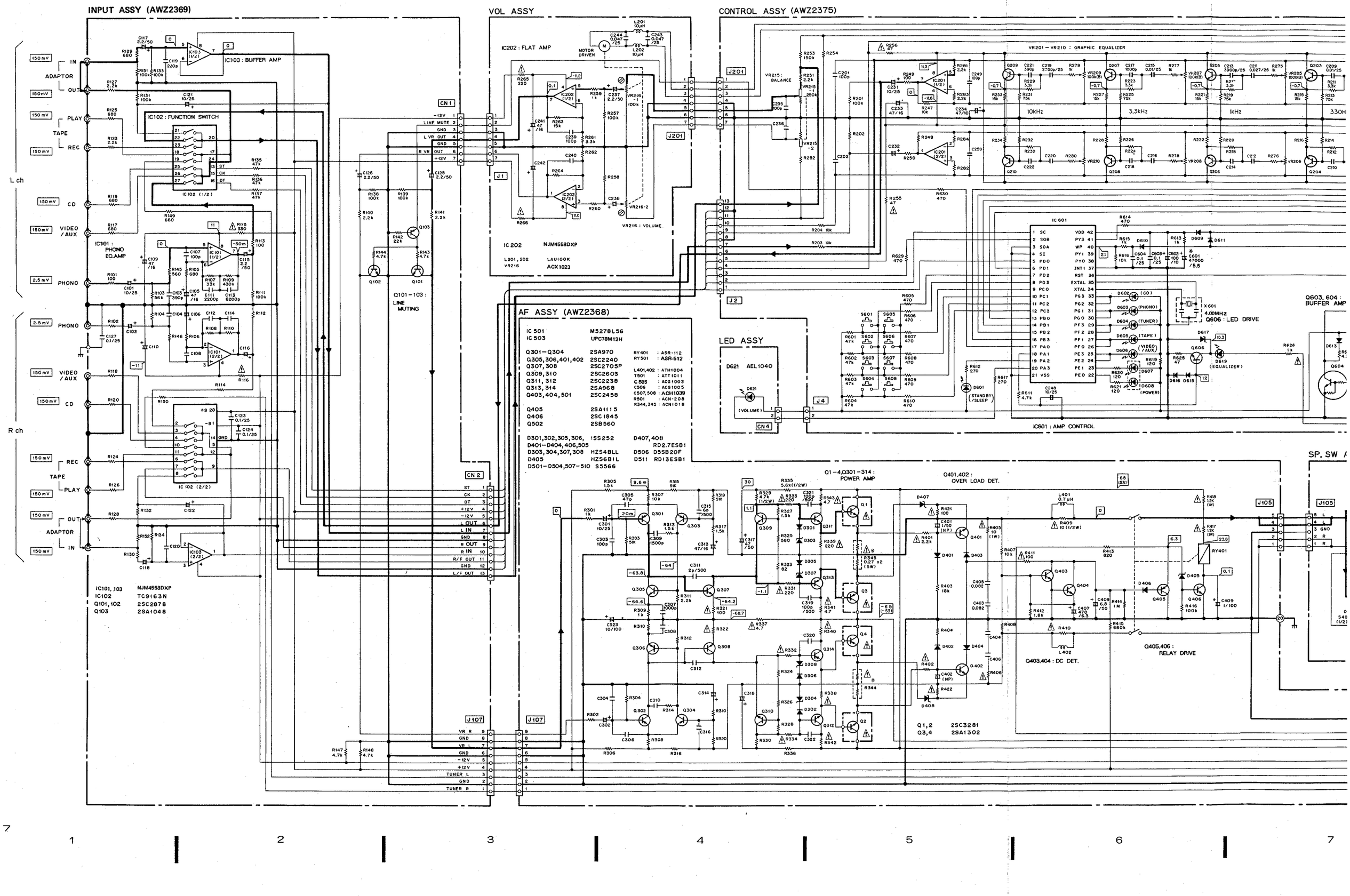


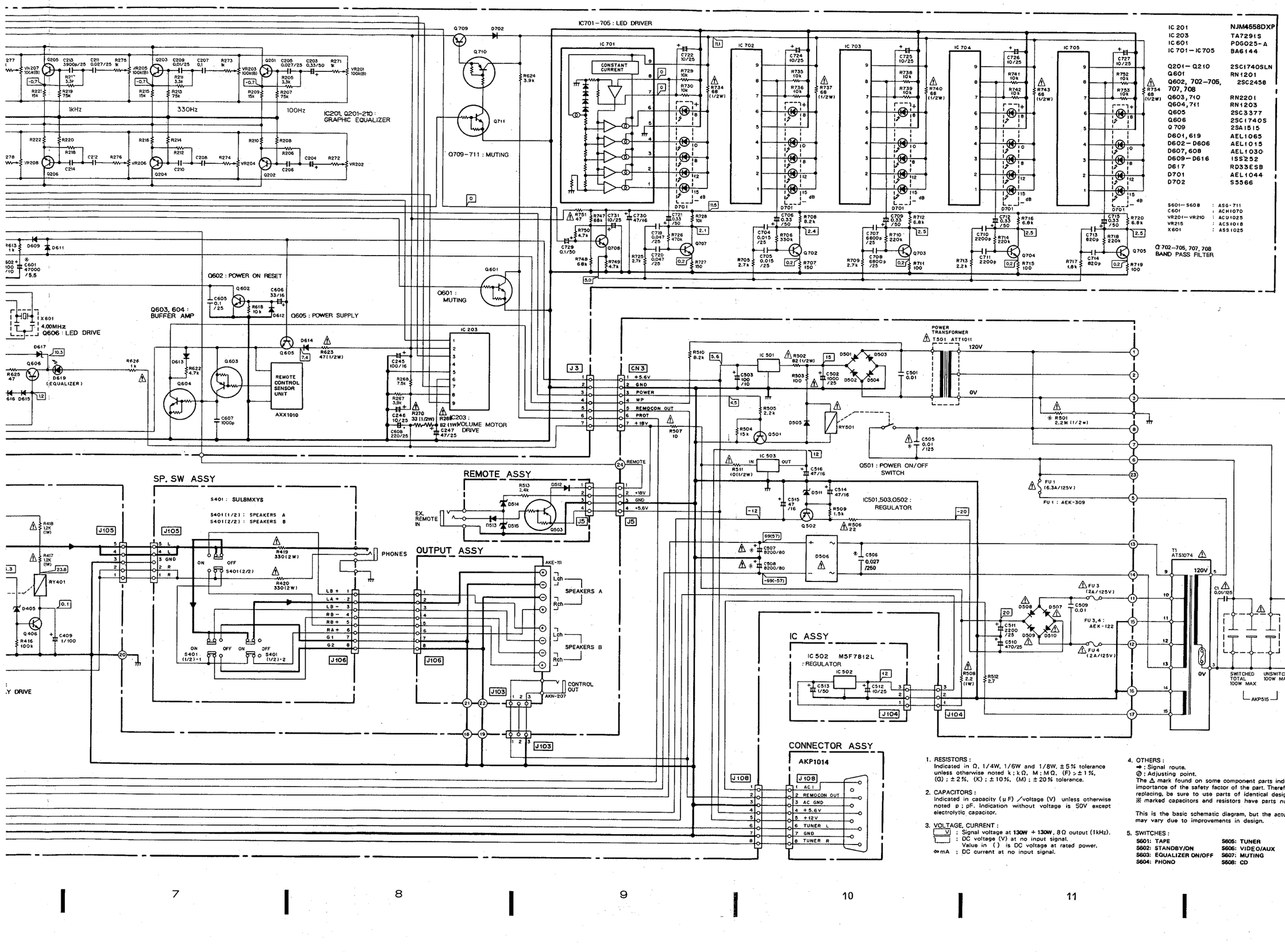

For SD type (Refer to P. 23)
16
19
47
62
65
6
19
22
67
14
19
9
8
10
12
4
2
1
3
18
64
14
14
15
49
20
35
66
21
13
59
69
13
13
61
21
21
11
19
5
7
19
S1
19
19
S2
52
63
19
57
19
19
58
19
46
19
60
48
19
65
50


70
41
44


42
40
39
R
FRONT
71
42
F
43

3. SCHEMATIC DIAGRAM





1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

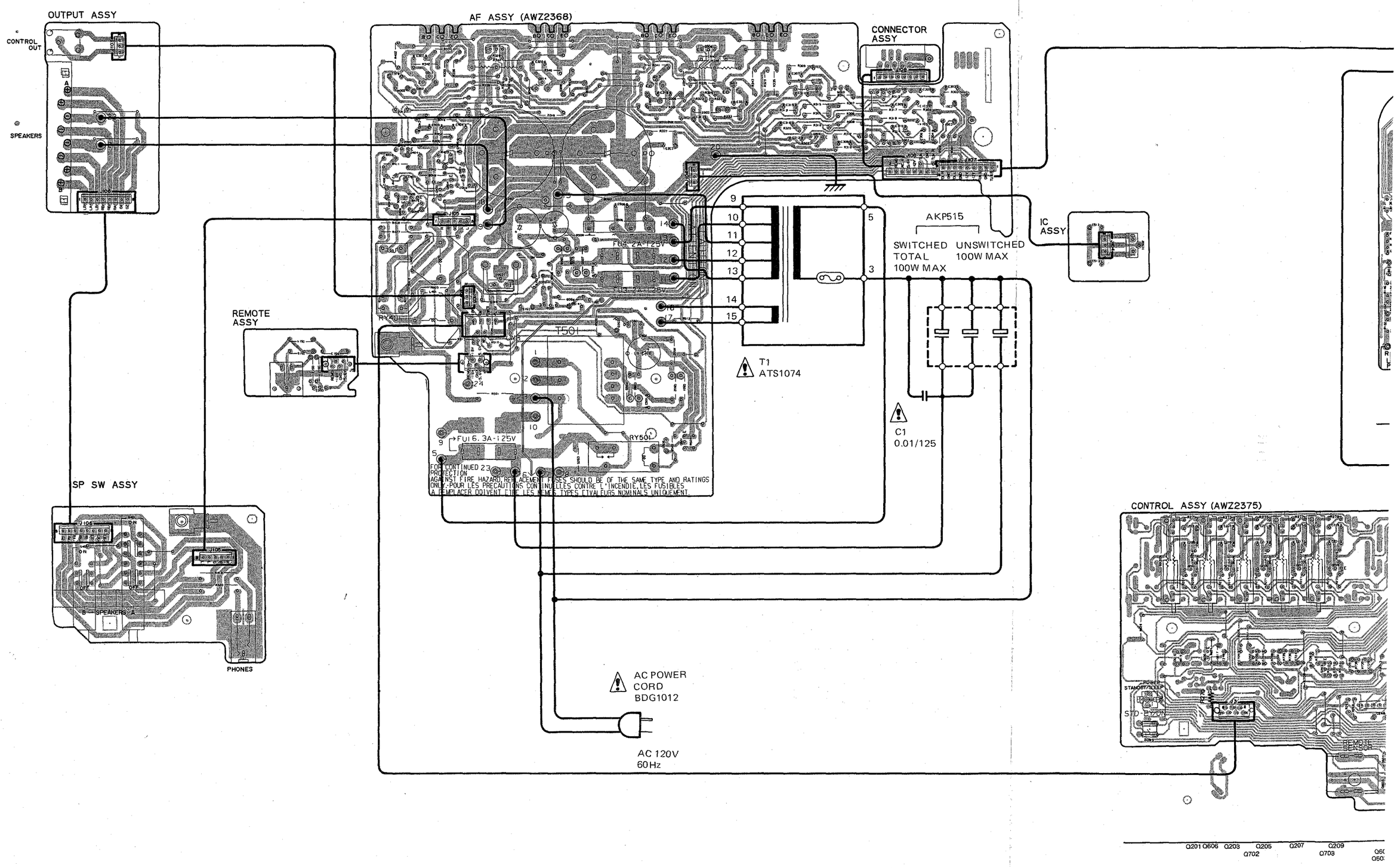
2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

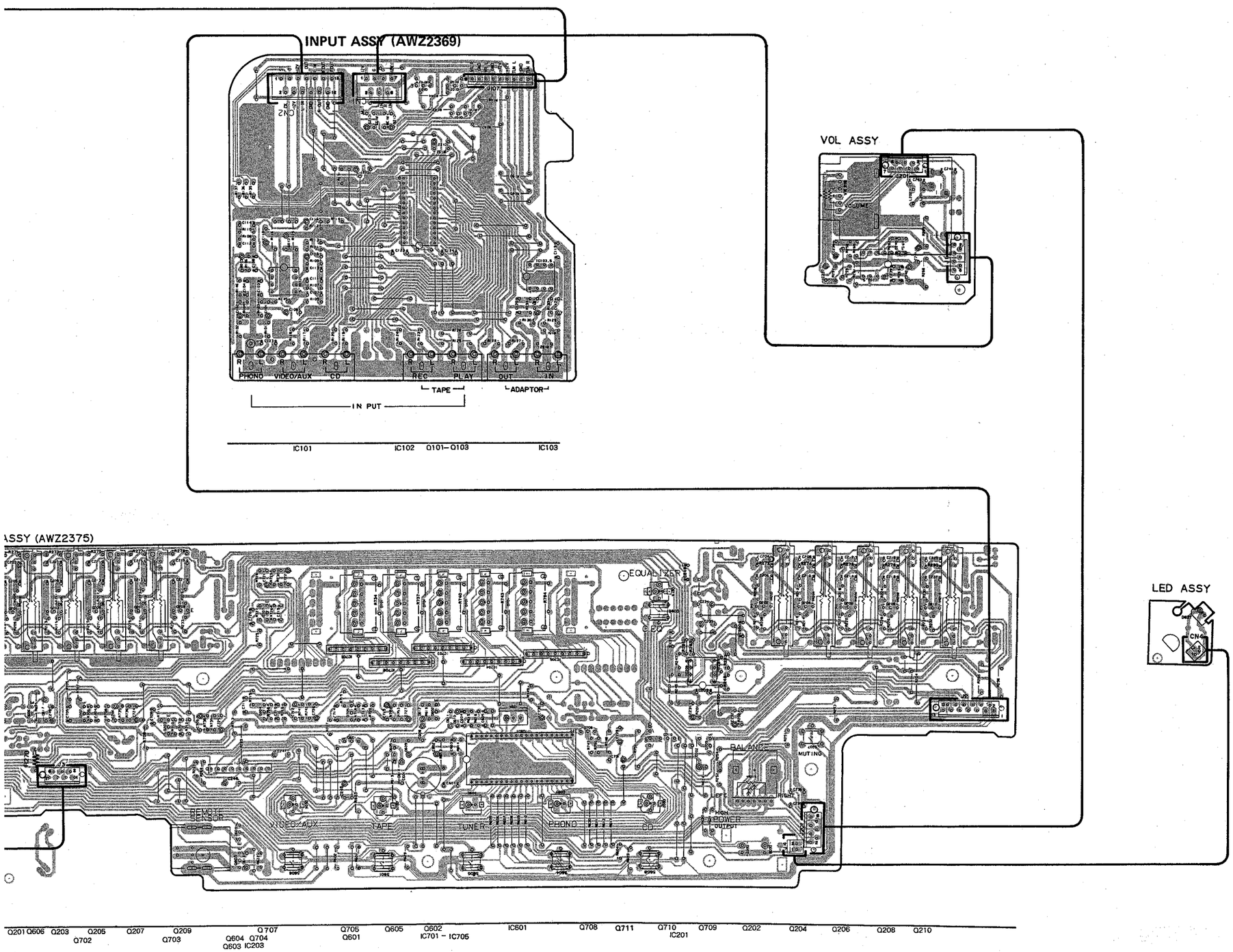
3. VOLTAGE, CURRENT :
V ; Signal voltage at **130W + 130W**, 8Ω output (1kHz).
; DC voltage (V) at no input signal.
Value in ( ) is DC voltage at rated power.
⇐mA ; DC current at no input signal.

4. OTHERS :
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES :
S601: TAPE **S605: TUNER**
S602: STANDBY/ON **S606: VIDEO/AUX**
S603: EQUALIZER ON/OFF **S607: MUTING**
S604: PHONO **S608: CD**


OUTPUT ASSY
CONTROL OUT
SPEAKERS
AF ASSY (AWZ2368)
Q312 Q401 – Q406
Q310 IC503
Q314 Q502
IC501
Q313
Q309
Q311
Q301 – Q308
CONNECTOR ASSY
IC ASSY
AKP515
SWITCHED TOTAL 100W MAX
UNSWITCHED 100W MAX
REMOTE ASSY
T501
T1
ATS1074
C1
0.01/125
FUSE 6.3A-125V
RY501
FOR CONTINUED 23
PROTECTION AGAINST FIRE HAZARD, REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY. POUR LES PRECAUTIONS CONTINUELLES CONTRE L'INCENDIE, LES FUSIBLES A REMPLACER DOIVENT ETRE LES MEMES TYPES (TYAL FUSE) NOMINALS UNIQUEMENT.
SP SW ASSY
SPEAKERS-A
PHONES
AC POWER CORD
BDG1012
AC 120V
60Hz
CONTROL ASSY (AWZ2375)
POWER STANDBY/SLEEP
STD-BYON
REMOTE SENSOR
Q201 Q606 Q203 Q205 Q207 Q209
Q702 Q703



NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

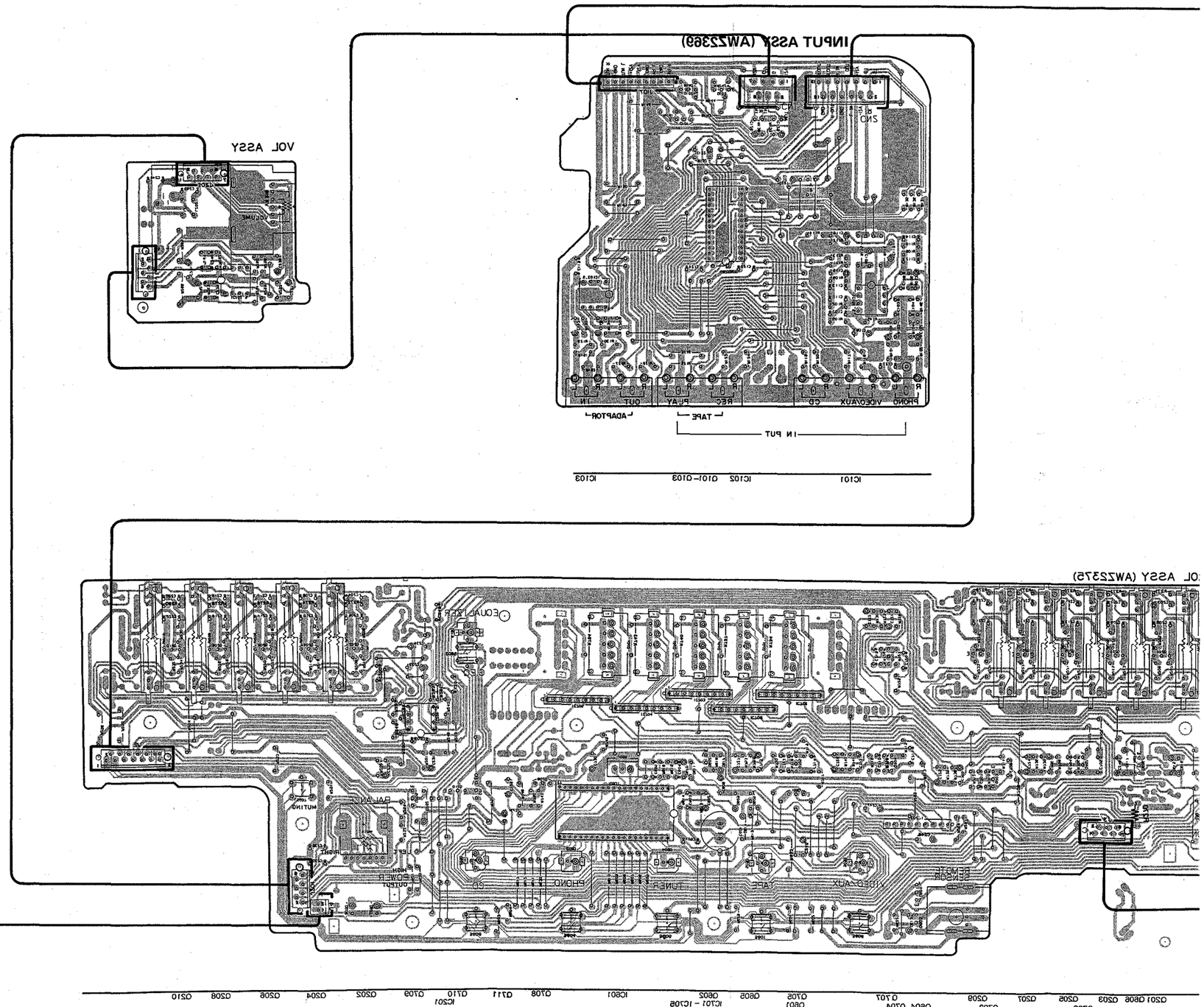
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

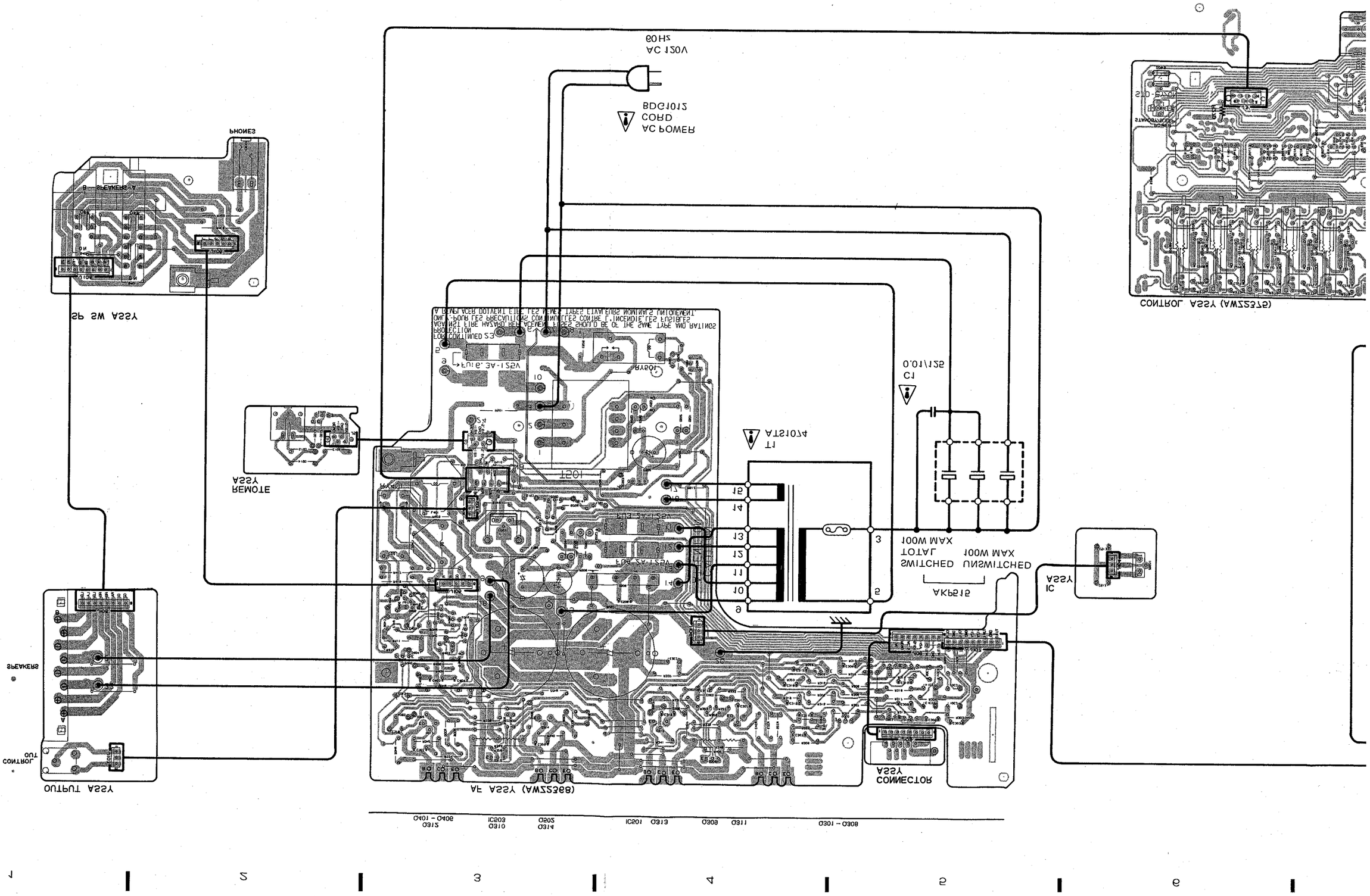
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ◎ (double circles) shows negatine terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

This P.C. B. connection diagram is viewed from the foil side.




CONTROL ASSY (AWZ527Z)
AC POWER CORD
120V AC 60Hz
AC OUTLET
CT
0.01\1KV
TRANSFORMER
TT
SWITCHED
TOTAL
UNSWITCHED
300W MAX
300W MAX
SPEAKER ASSY
PHONES
REMOTE ASSY
AMP ASSY (AWZ538Z)
CONNECTOR ASSY
IC ASSY
OUTPUT ASSY
SPEAKER
CONTROL OUT

5. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Micellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description		Part No.
		AF ASSY	AWZ2368
		INPUT ASSY	AWZ2369
		CONTROL ASSY	AWZ2375
		OUTPUT ASSY	
		IC ASSY	
		CONNECTOR ASSY	
		SP SW ASSY	
		REMOTE ASSY	
		VOL ASSY	
		LED ASSY	

OTHERS

Mark	Symbol & Description		Part No.
⚠	Q3, Q4	Transistor	2SA1302
⚠	Q1, Q2	Transistor	2SC3281
⚠	C1	Capacitor (0.01/AC125V)	ACG1003
⚠	T1	Power transformer	ATS1074
⚠		3P AC outlet	AKP-515
⚠	FU3, FU4	Fuse (2A)	AEK-122
⚠	FU1	Fuse (6.3A)	AEK-309
⚠		AC power cord	BDG1012

AF ASSY (AWZ2368)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC501	M5278L56
	IC503	UPC78M12H
	Q405	2SA1115
	Q313, Q314	2SA968
	Q301–Q304	2SA970
	Q502	2SB560
	Q406	2SC1845
	Q311, Q312	2SC2238
	Q305, Q306, Q401, Q402	2SC2240
	Q403, Q404, Q501	2SC2458
	Q309, Q310	2SC2603
	Q307, Q308	2SC2705P
	D506	D5SB20F
	D303, D304, D307, D308	HZS4BLL
	D405	HZS6B1L
	D511	RD13ESB1
	D407, D408	RD2.7ESB1
	D501–D504, D507–D510	S5566
	D301, D302, D305, D306, D401–D404, D406, D505	1SS252

RELAYS

Mark	Symbol & Description		Part No.
	RY401	Relay	ASR-112
⚠	RY501	Relay	ASR-512

COILS AND TRANSFORMER

Mark	Symbol & Description		Part No.
	L401, L402	AF choke coil	ATH1004
⚠	T501	Power transformer	ATT1011

CAPACITORS

Mark	Symbol & Description		Part No.
⚠	C505	(0.01μ/125V)	ACG1003
	C506		CQMA273K250
	C507, C508	(8200μ/80V)	ACH1039
	C311, C312		CCCSL020C500
	C315, C316		CCCSL060D500
	C319–C322		CCCSL101K500
	C303, C304		CCMSL101J50
	C305, C306		CCMSL470J50
	C401, C402		CEANP010M50
	C409		CEAS010M100
	C323		CEAS100M100
	C301, C302		CEAS100M25
	C503		CEAS101M10
	C502		CEAS102M25
	C511		CEAS222M25

Mark	Symbol & Description	Part No.
	C313, C314, C514–C516	CEAS470M16
	C317, C318	CEAS470M50
	C510	CEAS471M25
	C407	CEAS471M6
	C408	CEAS6R8M50
	C403–C406	CFTXA823J50
	C501, C509	CKCYF103Z50
	C307, C308	CKMYB102K50
	C309, C310	CKMYB152K50

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R501 (2.2M/1/2W)	ACN–208
⚠	R344, R345	ACN1018
⚠	R502	RD1/2PMFL820J
⚠	R409, R410, R511	RD1/2PMF100J
	R329, R330	RD1/2PM472J
	R335, R336	RD1/2PM562J
⚠	R421, R422, R503	RD1/4PMF101J
⚠	R331–R334	RD1/4PMF221J
⚠	R401, R402	RD1/4PMF222J
⚠	R337	RD1/4PMF4R7J
⚠	R507	RFA1/4PS100J
⚠	R321, R322, R411	RFA1/4PS101J
⚠	R506	RFA1/4PS220J
⚠	R338, R339	RFA1/4PS221J
⚠	R340–R343	RFA1/4PS4R7J
⚠	R405, R406	RS1PMF100J
⚠	R417, R418	RS1PMF122J
⚠	R508	RS1PMF2R2J
	R301–R320, R509, R512	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

INPUT ASSY (AWZ2369)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC101, IC103	NJM4558DXP
	IC102	TC9163N
	Q103	2SA1048
	Q101, Q102	2SC2878

CAPACITORS

Mark	Symbol & Description	Part No.
	C107, C108	CCMSL101J50
	C101, C102, C121, C122	CEAS100M25
	C115–C118, C125, C126	CEAS2R2M50
	C105, C106, C109, C110	CEAS470M16
	C111, C112	CKCYB222K50
	C113, C114	CKCYB822K50
	C123, C124, C127	CKCYX104M25
	C119, C120	CKMYB221K50
	C103, C104	CKMYB391K50

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R115, R116	RD1/4PMF331J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	4P pin jack	AKB1007
	6P pin jack	AKB1024

CONTROL ASSY (AWZ2375)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC701–IC705	BA6144
	IC201	NJM4558DXP
	IC601	PDG025-A
	IC203	TA7291S
	Q601	RN1201
	Q604, Q711	RN1203
	Q603, Q710	RN2201
	Q709	2SA1515
	Q606	2SC1740S
	Q201–Q210	2SC1740SLN
	Q602, Q702–Q705, Q707, Q708	2SC2458
	Q605	2SC3377
	D602–D606	AEL1015
	D607, D608	AEL1030
	D701	AEL1044
	D601, D619	AEL1065
	D617	RD33ESB
	D702	S5566
	D609–D616	1SS252

SWITCHES

Mark	Symbol & Description	Part No.
	S601–S608 Tact switch	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C601 (4700μ/5.5V)	ACH1070
	C201, C202, C235, C236, C249, C250	CCMSL101J50
	C706, C709, C712, C715, C721	CEASR33M50
	C729	CEASOR1M50
	C231, C232, C246, C248, C722, C724–C727, C731	CEAS100M25
	C602	CEAS101M10
	C245	CEAS101M16
	C606	CEAS330M16
	C233, C234, C730	CEAS470M16
	C247	CEAS470M25
	C203, C204	CEJAR33M50
	C207, C208	CFTXA104J50
	C710, C711	CGMYB222M50
	C219, C220	CGMYB272M25
	C213, C214	CGMYX392M25
	C707, C708	CGMYX682M25
	C603–C605	CKCYX104M25
	C704, C705	CKCYX153M25
	C719, C720	CKCYX473M25
	C209, C210, C215, C216	CKDYX103M25
	C205, C206, C211, C212	CKDYX273M25
	C217, C218, C607	CKMYB102K50
	C221, C222	CKMYB391K50
	C713, C714	CKMYB821K50

RESISTORS

Mark	Symbol & Description	Part No.
	VR215 (250K x 2)	ACS1018
	VR201–VR210 (100K)	ACU1025
⚠	R270	RD1/2PMF330J
⚠	R623	RD1/2PMF470J
⚠	R734, R737, R740, R743, R754	RD1/2PMF680J
⚠	R626	RD1/4PMF102J
⚠	R255, R256, R751	RFA1/4PS470J
⚠	R269	RS1LMF820J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description		Part No.
	X601	Ceramic resonator (4.00MHZ)	ASS1025
		Remote control sensor unit	AXX1010
		2P wire assembly	ADX1189

OUTPUT ASSY

OTHERS

Mark	Symbol & Description		Part No.
		8P speaker terminal	AKE-111
		Mini jack	AKN-207

IC ASSY

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	IC502	M5F7812L

CAPACITORS

Mark	Symbol & Description	Part No.
	C513	CEHAQ010M50
	C512	CEHAQ100M25

CONNECTOR ASSY

OTHER

Mark	Symbol & Description	Part No.
	9P socket	AKP1014

SP SW ASSY

SWITCH

Mark	Symbol & Description		Part No.
	S401	Push switch	SUL8MXYS

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R419, R420	RS2LMF331J

OTHER

Mark	Symbol & Description	Part No.
	Phone jack	AKN1013

REMOTE ASSY

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q503	RN2201
	D515	RD5.1ESB
	D514	RD6.8ESB
	D512, D513	1SS252

RESISTOR

Mark	Symbol & Description	Part No.
	R513	RD1/8PM242J

OTHER

Mark	Symbol & Description	Part No.
	Mini jack	AKN1020

VOL ASSY

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	IC202	NJM4558DXP

COILS

Mark	Symbol & Description	Part No.
	L201, L202 (10μH)	LAU100K

CAPACITORS

Mark	Symbol & Description	Part No.
	C239, C240	CCMSL101J50
	C237, C238	CEAS2R2M50
	C241, C242	CEAS470M16
	C243, C244	CKCYX473M25

RESISTORS

Mark	Symbol & Description	Part No.
	VR216 (Variable resistor with motor, 100K x 2)	ACX1023
⚠	R265, R266	RD1/4PMF221J
	R257–R260, R261–R264	RD1/8PM□□□J

LED ASSY

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	D621	AEL1040

6. FOR SA-1510S/KUC, SD/G AND SA-1510/SD TYPES

6.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The SA-1510/SD, SA-1510S/KUC and SD/G types are the same as the SA-1510/KUC type with the exception of the following sections.

Mark	Symbol & Description	Part No.			
		SA-1510/KUC	SA-1510/SD	SA-1510S/KUC	SA-1510S/SD/G
	AF ASSY	AWZ2368	AWZ2372	AWZ2368	AWZ2372
	INPUT ASSY	Non supply	Non supply	Non supply	Non supply
	CONTROL ASSY	AWZ2375	AWZ2370	AWZ2375	AWZ2370
	Packing case	AHD1594	AHD1594	AHD1652	AHD1652
⚠	AC power cord	BDG1012	ADG1015	BDG1012	ADG1015
⚠	Power transformer(AC120V)	ATS1074	•••	ATS1074	•••
⚠	Power transformer (AC110V,120V-127V,220V,240V)	•••	ATS1092	•••	ATS1092
⚠	Line voltage selector(S1)	•••	AKX-507	•••	AKX-507
⚠	Line voltage selector(S2)	•••	AKX1004	•••	AKX1004
⚠	Fuse(FU1)(6.3A)	AEK-309	•••	AEK-309	•••
⚠	Fuse(FU1,FU2)(3.15A)	•••	AEK-124	•••	AEK-124
	Operating instructions(Spanish)	•••	ARC1165	•••	•••
	Operating instructions(English) (For Remote control unit)	ARD1008	ARD1009	ARD1010	ARD1010
	Rear panel	Non supply	Non supply	Non supply	Non supply
	Remote control unit	AXD1090	AXD1102	AXD1103	AXD1103
	Battery cover	AZN1846	AZN1846	AZA1138	AZA1138
	PVC panel	AAK1669	AAK1740	AAK1669	AAK1740

AF ASSY

The AF ASSY (AWZ2372) is the same as same the AF ASSY (AWZ2368) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		AWZ2368 (SA-1510/KUC) (SA-1510S/KUC)	AWZ2372 (SA-1510/SD) (SA-1510S/SD/G)	
⚠	T501(Power Transformer)	ATT1011	ATT1015	
⚠	R501	ACN-208	•••	

INPUT ASSY

The INPUT ASSY (AWZ2373) is the same as same the INPUT ASSY (AWZ2369) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		AWZ2369 (SA-1510/KUC) (SA-1510S/KUC)	AWZ2373 (SA-1510/SD) (SA-1510S/SD/G)	
	R121,R122	•••	RD1/8PM681J	
	6P pin jack	•••	AKB1008	

CONTROL ASSY

The CONTROL ASSY (AWZ2370) is the same as same the CONTROL ASSY (AWZ2375) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		AWZ2375 (SA-1510/KUC) (SA-1510S/KUC)	AWZ2370 (SA-1510/SD) (SA-1510S/SD/G)	
	Q607	•••	2SC1740S	
	D618	•••	RD33ESB	
	D619	AEL1065	•••	
	C608	•••	CEAS221M25	
	C613-C622	•••	CEJA101M6	
	VR201-VR210	ACU1025	ACU1024	
⚠	R626	RD1/4PMF102J	RD1/4PMF470J	
⚠	R627	•••	RD1/4PMF470J	
	R628	•••	RD1/8PM470J	

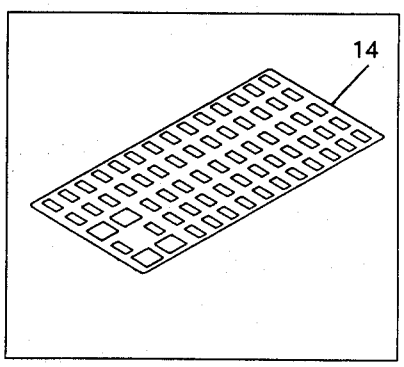
6.2 REMOTE CONTROL UNIT (AXD1103)

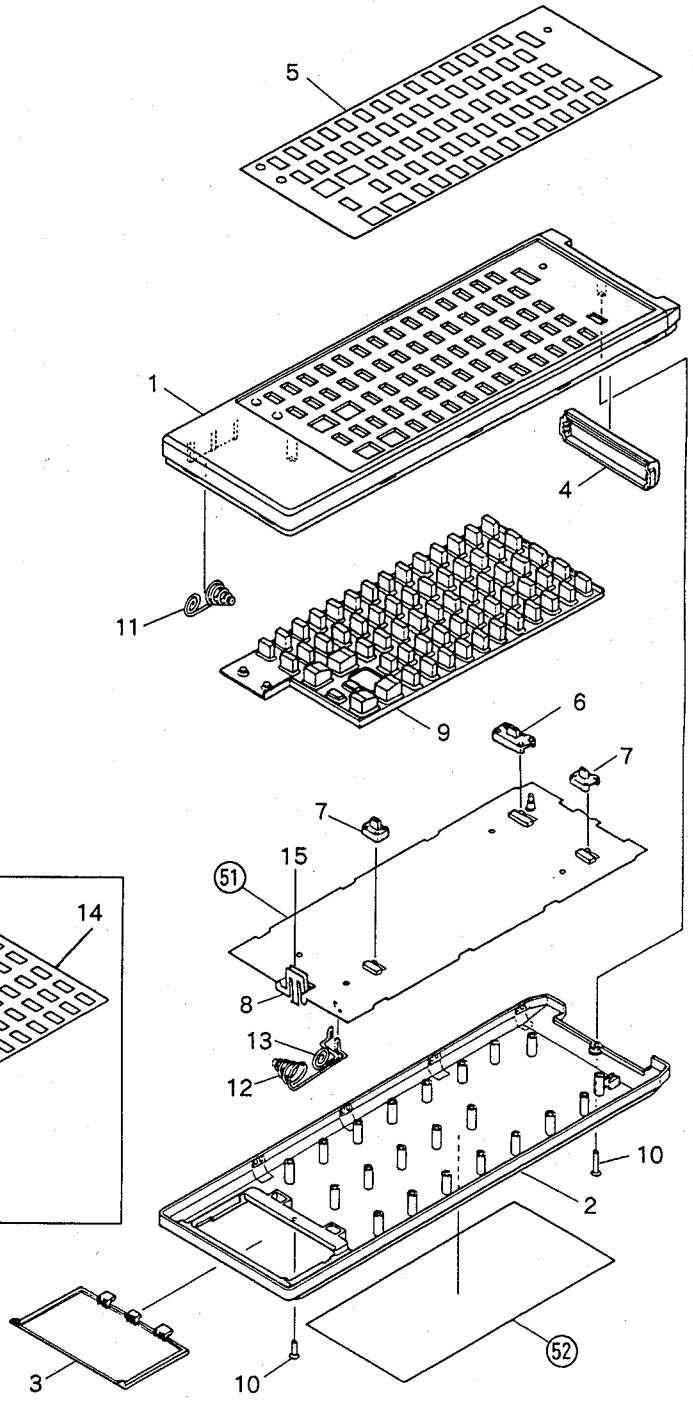
6.2.1 EXPLODED VIEWS AND PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark	No.	Part No.	Description
	1	AZA1136	Case (A)
	2	AZA1137	Case (B)
	3	AZA1138	Battery cover
	4	AZA1139	Filter
	5	AZA1187	Name plate
	6	AZA1142	Knob (A)
	7	AZA1143	Knob (B)
	8	AZA1144	REMOTE POWER (SW1(A))
	9	AZA1186	Rubber sheet
	10	AZA1146	Screw
	11	AZB1268	Electrode spring
	12	AZB1269	Electrode spring
	13	AZB1270	Electrode spring
	14	AZA1152	Sheet
	15	AZS1077	REMOTE POWER (SW1(B))
	51		P.C.B board
	52		Label





6.2.2 ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	PDG019-C
	IC2	AZC1232
	Q1	AZC1229
	Q2	AZC1230
	Q3	AZC1231
	D2	AZC1224
	D4	AZC1225
	D5	AZC1226
	D6–D9, D11	AZC1228
	D10	AZC1227

SWITCHES

Mark	Symbol & Description		Part No.
	S01, S06	Slide switch (AUDIO/VIDEO, SUR/AMP)	AZS1073
	S03, S04	Slide switch (SR/USE/LEARN)	AZS1074
	SW1(A)	REMOTE POWER	AZA1144
	SW1(B)	REMOTE POWER	AZS1077

CAPACITORS

Mark	Symbol & Description		Part No.
	C1, C2	(100μF/6V)	AZC1253
	C3	(10μF/16V)	AZC1254
	C4, C5	(100pF)	AZC1222
	C6, C8–C10	(0.01μF)	AZC1220
	C7	(1000pF)	AZC1221

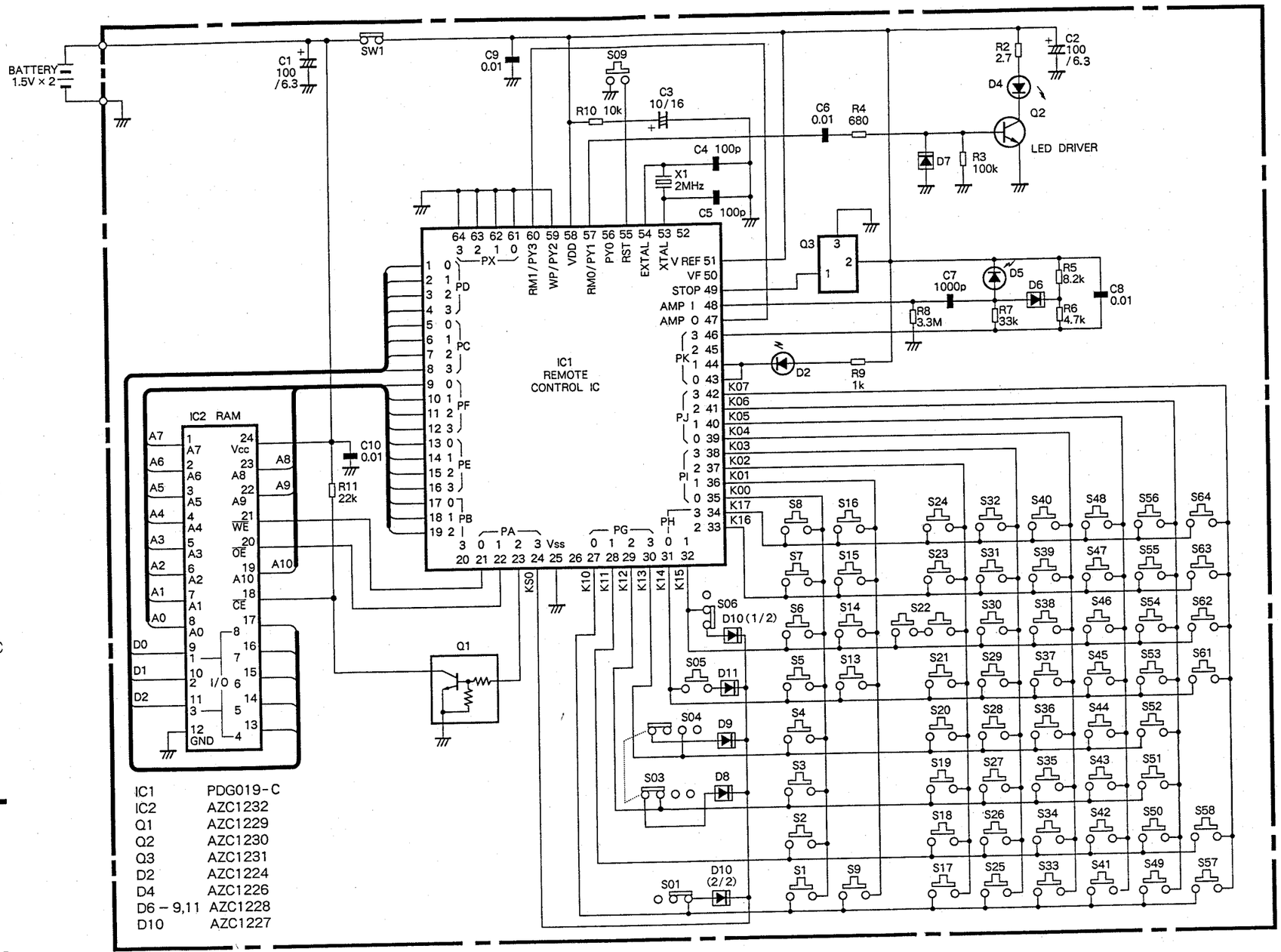
RESISTORS

Mark	Symbol & Description		Part No.
	R2	(2.7Ω)	AZC1219
	R3	(100 kΩ)	AZC1210
	R4	(680Ω)	AZC1217
	R5	(8.2 kΩ)	AZC1214
	R6	(4.7 kΩ)	AZC1215
	R7	(33 kΩ)	AZC1211
	R8	(3.3 MΩ)	AZC1218
	R9	(1 kΩ)	AZC1216
	R10	(10 kΩ)	AZC1213
	R11	(22 kΩ)	AZC1212

OTHERS

Mark	Symbol & Description		Part No.
	X1	Ceramic resonator (2.0 MHz)	AZC1223

6.2.3 SCHEMATIC DIAGRAM



IC1	PDG019-C
IC2	AZC1232
Q1	AZC1229
Q2	AZC1230
Q3	AZC1231
D2	AZC1224
D4	AZC1226
D6 – 9,11	AZC1228
D10	AZC1227

1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. OTHERS :
➔ ; Signal route.
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

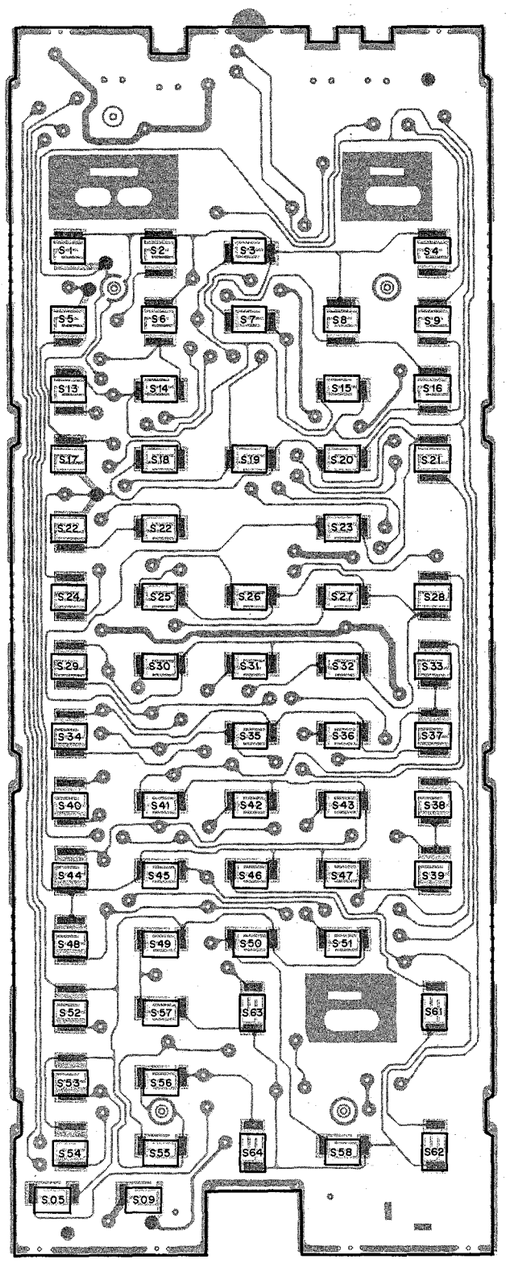
4. SWITCHES : (The underlined indicates the switch position)
SW1 : REMOTE POWER
S01 : AUDIO/VIDEO

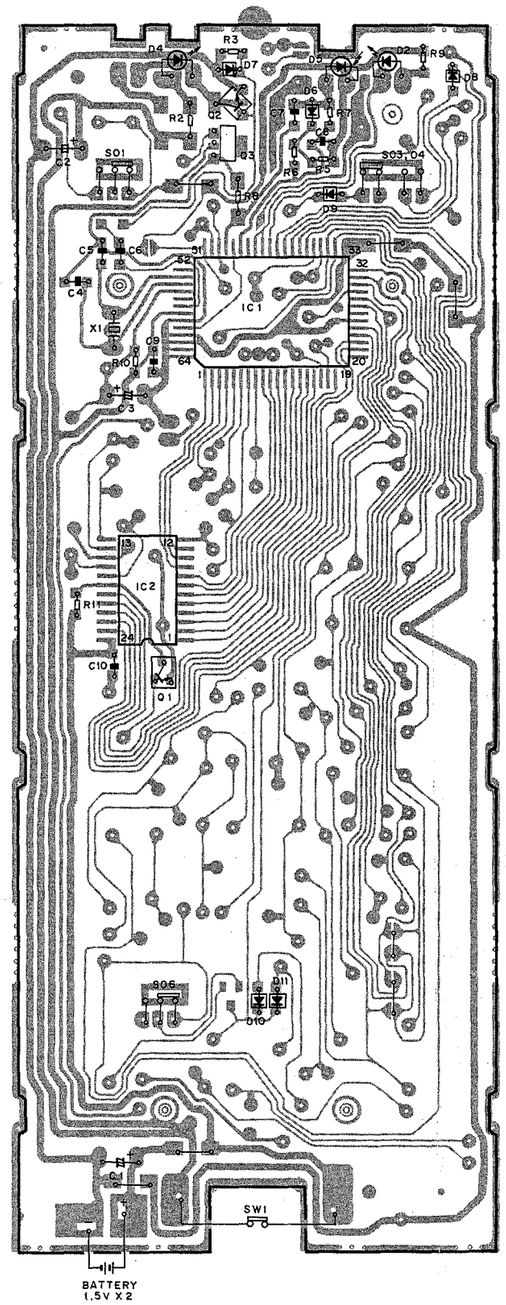
	SR RECALL	USE	LEARN
S03	ON	OFF	OFF
S04	OFF	OFF	ON

S05 : M – CLR
S06 : SUR/AMP
S09 : RESET

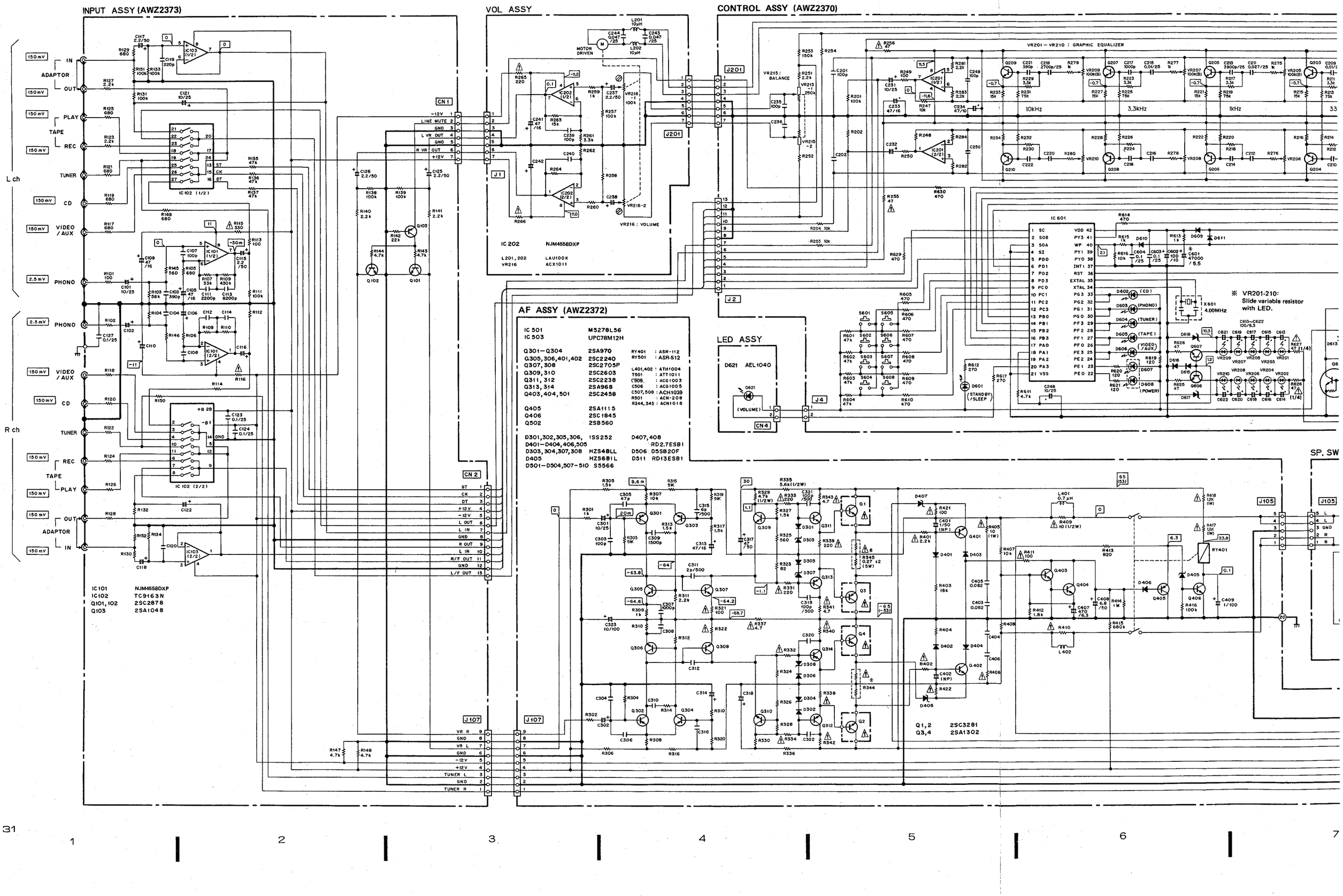
S1 : AMP
S2 : TV POWER
S3 : VCR
S4 : SLEEP AMP/TV
S5 : V/AUX
S6 : TAPE
S7 : TUNER
S8 : PHONO
S9 : CD
S13 : PGM
S14 : DISC/DISPLAY
S15 : ⏮/CHP/FR – TM
S16 : ⏭ SEARC
S17 : ◀◀ CD/VDP
S18 : ❙❙
S19 : ■
S20 : ▶
S21 : ▶▶
S22 : ● (REC)
S23 : ❙❙
S24 : ◀◀
S25 : ◀/TV/VCR TAPE (DECK II) /VCR
S26 : ■
S27 : ▶
S28 : ▶▶
S29 : ◀◀/TV
S30 : ◀/VDP
S31 : ■/VCR TAPE (DECK I) /VCR
S32 : ▶/CH –
S33 : ▶▶/CH +
S34 : CD + 10
S35 : 1 – 12/13 – 24/TV ANT
S36 : BAND/DUAL
S37 : TV DISPLAY
S38 : CHANNEL +
S39 : CHANNEL –
S40 : 1/13
S41 : 2/14
S42 : 3/15
S43 : 4/16
S44 : 5/17
S45 : 6/18
S46 : 7/19
S47 : 8/20
S48 : 9/21
S49 : 0/10/22
S50 : 11/23/MEMORY
S51 : 12/24/CLEAR
S52 : TV FUNCTION
S53 : TV VOL +
S54 : TV VOL –
S55 : AUDIO SOURCE
S56 : VIDEO FUNCTION
S57 : SURROUND MODE
S58 : MUTING
S61 : MASTER VOLUME +
S62 : MASTER VOLUME –
S63 : SURROUND VOLUME +
S64 : SURROUND VOLUME –

6.2.4 P.C. BOARD PATTERNS





6.3 SCHEMATIC DIAGRAM FOR SA1510/SD AND SA-1510S/SD/G TYPES



IC 201	NJM4558DXP
IC 203	TA7291S
IC 601	PD6025-A
IC 701 – IC 705	BA6144
Q201 – Q210	2SC1740SLN
Q601	RN1201
Q602, 702–705, 707, 708	2SC2458
Q603, 710	RN2201
Q604, 711	RN1203
Q605	2SC3377
Q606, Q607	2SC1740S
Q709	2SA1515
D601	AEL1065
D602 – D606	AEL1015
D607, 608	AEL1030
D609 – D616	1SS252
D617, D618	RD33ESB
D701	AEL1044
D702	S5566

S601–S608	: ASG-711
C601	: ACH1070
VR201–VR210	: ACU1024
VR215	: ACS1018
X601	: ASS1025

※ VR201-210: Slide variable resistor with LED.

SP. SW ASSY

S401 : SULBMXYS
S401(1/2) : SPEAKERS A
S401(2/2) : SPEAKERS B

REMOTE ASSY

OUTPUT ASSY

IC ASSY

IC 502 M5F7812L

CONNECTOR ASSY

AKP1014

1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%, (M) : ±20% tolerance.

2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p : pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
V ; Signal voltage at 130W + 130W, 8Ω output (1kHz).
; DC voltage (V) at no input signal. Value in ( ) is DC voltage at rated power.
⇦mA ; DC current at no input signal.

4. OTHERS :
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

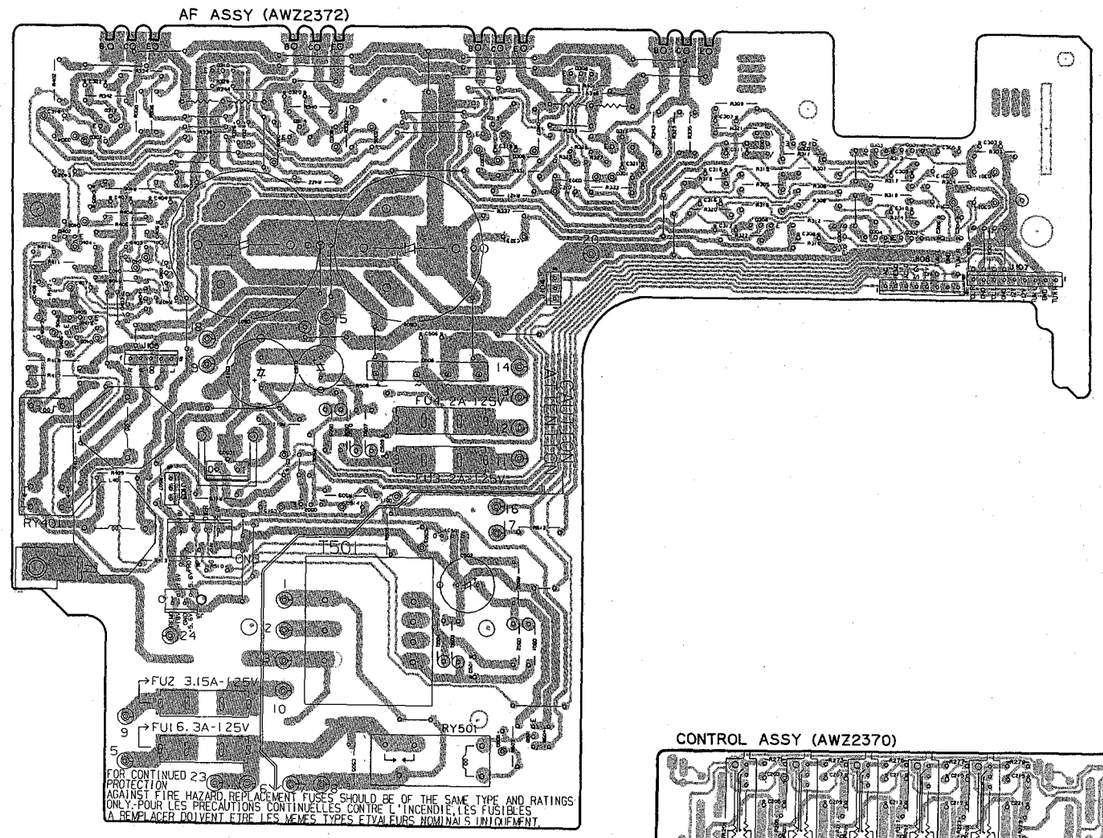
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES :

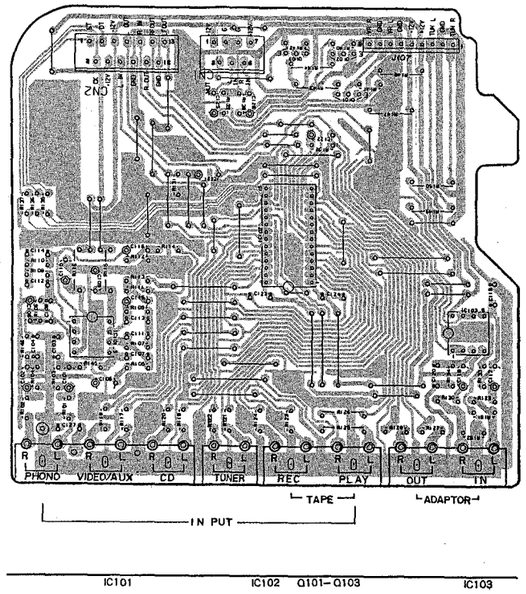
S601: TAPE	S605: TUNER
S602: STANDBY/ON	S606: VIDIO/AUX
S603: EQUALIZER ON/OFF	S607: MUTING
S604: PHONO	S608: CD

6.4 P.C. BOARD PATTERNS FOR SA-1510/SD AND SA-1510/SD/G TYPES

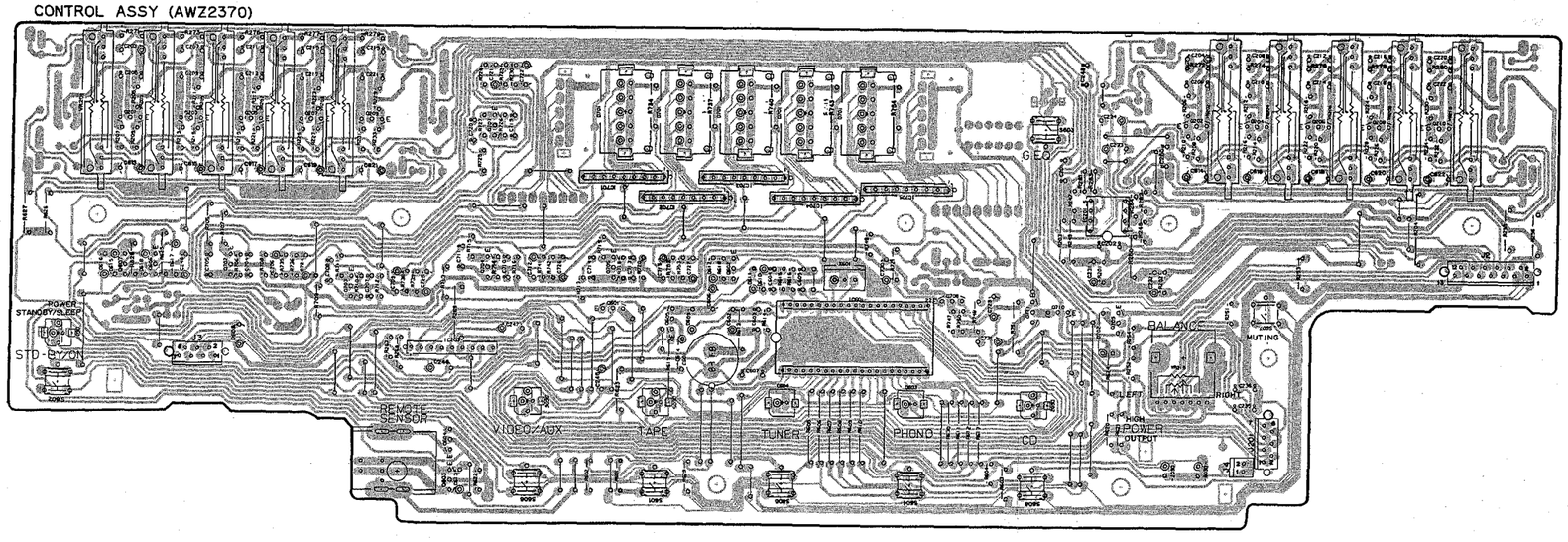
AF ASSY (AWZ2372)



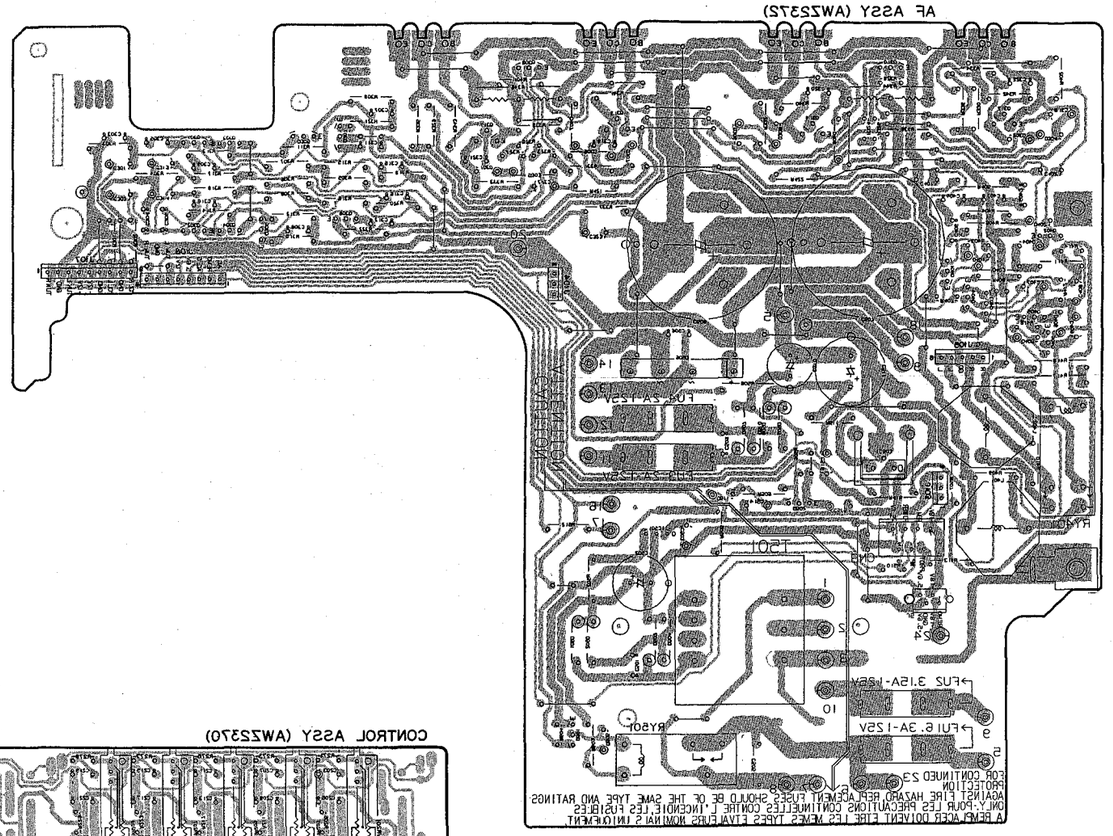
INPUT ASSY (AWZ2373)



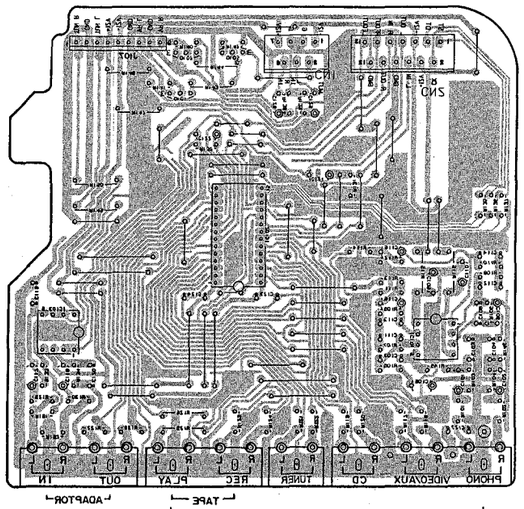
CONTROL ASSY (AWZ2370)



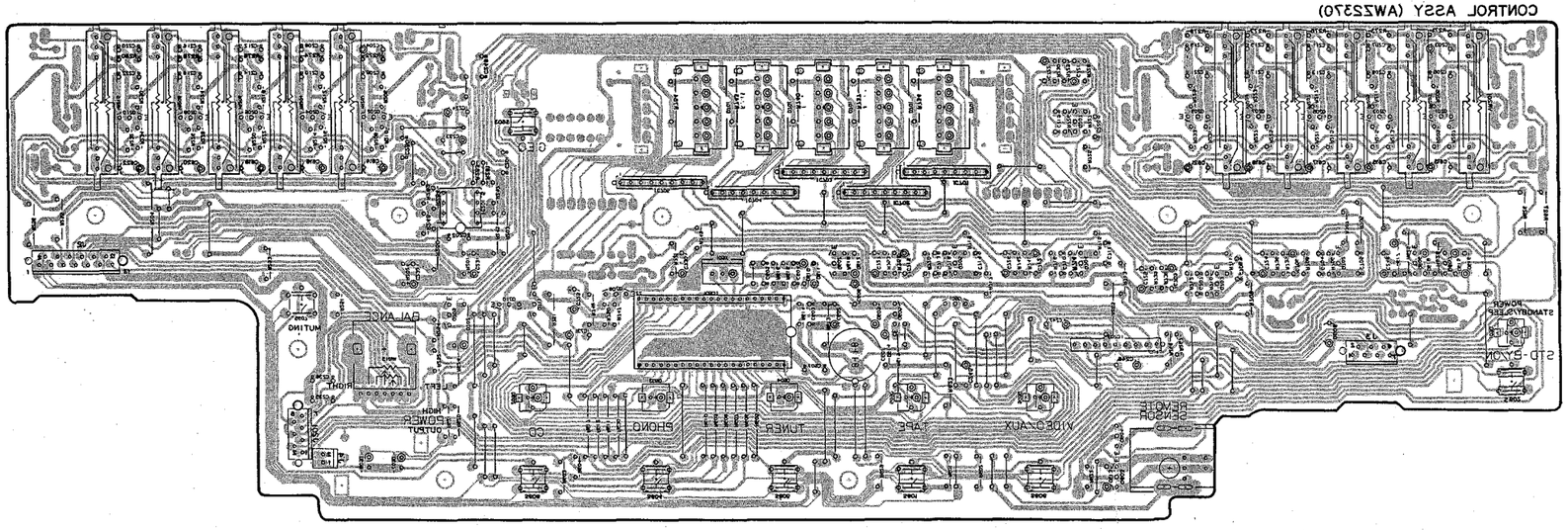
AF ASSY (AWZ2372)



INPUT ASSY (AWZ2373)

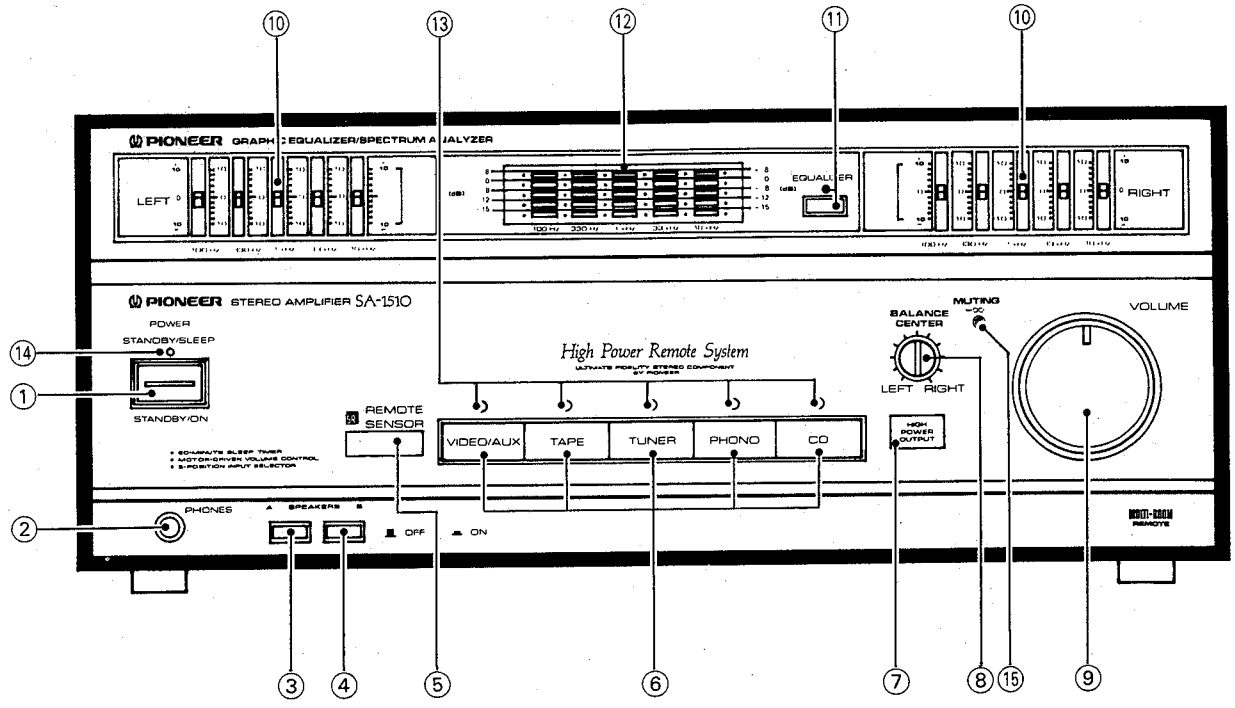


CONTROL ASSY (AWZ2370)



This P.C. B. connection diagram is viewed from the foil side.

7. PANEL FACILITIES



① POWER (STANDBY/ON) switch

- The accessory remote control unit can also be used to operate STANDBY/ON function of this switch.
- The POWER switch selects the transformer secondary even in STANDBY position. The unit circuitry will work as long as the power cord is connected to a wall socket.
- When not using the unit for a long period, disconnected the power cord.

② PHONES jack

When using headphones, insert their plug into this jack.

③ SPEAKERS A ON/OFF switch

Use this switch to listen to the speaker systems connected to the SPEAKERS A terminals.

[ON] — Depressed position: Sound is heard from the speaker systems.

[OFF] — Released position: No sound is heard from the speaker system. Set to this position when listening with headphones.

④ SPEAKERS B ON/OFF switch

Use this switch to listen to the speaker systems connected to the SPEAKERS B terminals.

[ON] — Depressed position: Sound is heard from the speaker systems.

[OFF] — Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

⑤ REMOTE SENSOR window

⑥ FUNCTION switches

Use to select playback source.

[CD] — Press when listening to compact disc playback with a CD player.

[PHONO] — Press when listening to record playback on a turntable.

[TUNER] — Press when listening to AM or FM broadcasts with tuner.

[TAPE] — Press when listening to tape playback with a cassette deck.

[VIDEO/AUX] — Press when listening to programs from a component connected to the VIDEO/AUX terminals.

Selection can also be performed with accessory remote control unit.

⑦ POWER indicator

Flashes rapidly for about 5 seconds after the power is turned on until sound is produced, and flashes slowly in the muting mode.

⑧ BALANCE control

Should normally be left in the center position. Adjust balance if the sound is louder from one of the speakers. If the right side is louder, turn toward the LEFT position, and if the left side is louder, turn toward the RIGHT position.

⑨ VOLUME control/indicator

Use to adjust sound volume.
When operated by remote control, this control will rotate with the knob indicator flashing.
Adjustment can also be performed with the accessory remote control unit.

⑩ GRAPHIC EQUALIZER controls

These controls can be used to emphasize or de-emphasize sounds in the frequency bands 100Hz, 330Hz, 1kHz, 3.3kHz, and 10kHz, thus allowing you to control tone quality. The center position of each control is the normal (flat) setting. When raised above the center position, the control frequency band is emphasized; when lowered, the band is de-emphasized.

⑪ EQUALIZER ON/OFF switch/indicators

When this switch is pressed, the GRAPHIC EQUALIZER control's indicators turn on, and its functions become operative.
When pressed once again, the indicators are turned off.
Use this switch in the following manner:

[ON] : When using the equalizer to add sound compensation while performing program sources, and playing back and/or recording results.

[OFF] : When not using the equalizer, but playing back or recording program sources without compensation.

NOTE

Equalizer ON/OFF indication is provided by a light on the equalizer switch itself on U.S. and Canadian models, or by control knob indicators on other models.

⑫ SPECTRUM ANALYZER

This display shows the condition of sound signals compensated with the graphic equalizer controls.
(Because the level indicator is connected to the input side, the indication does not change when the VOLUME control is turned.)

⑬ FUNCTION indicators

These indicators light to show the setting of the FUNCTION switches.

⑭ STANDBY/SLEEP indicator

- This indicator flashes when the accessory remote control unit is used to turn the SLEEP key. When the SLEEP key is ON, the indicator will flash. (Initially it will flash slowly, then gradually become faster.)
  Sixty minutes after the sleep timer is turned ON, the power switch will be turned to STANDBY automatically.
- This indicator lights when the accessory remote control unit or this unit is used to turn the POWER key.

⑮ MUTING switch

Use to temporarily cut out all audio signals.
When the function is ON, sounds will be cut off. (POWER indicator will flash)
When turned OFF, the sound returns to its previous level.
The muting ON/OFF function can also be operated by the accessory remote control unit.

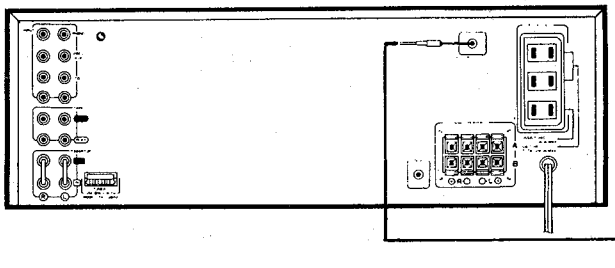
This component features a built-in microcomputer which will recall the last-set positions of the following switches for up to about several days after the power cord is disconnected. As a result, when the power is turned ON again, the previously set positions will be recalled auto matically:

- MUTING switch
- FUNCTION switch
- EQUALIZER ON/OFF switch

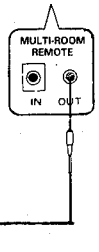
When the unit is not used for more than several days, the memorized setting positions will be erased, and returned to the following settings:

- MUTING switch ..... OFF
- FUNCTION switches ..... TUNER
- EQUALIZER ON/OFF switch ..... OFF

CONNECTING THE MULTI-ROOM REMOTE IN TERMINAL



To the optional Multi-Room Remote control unit MR-100



* For details, see instruction manual for Multi-Room Remote control unit.

NOTE

Be careful not to make the wrong connections for CONTROL OUT (black) and MULTI-ROOM REMOTE IN (green).

8. SPECIFICATIONS

Amplifier Section

U.S., Canadian models

Continuous average power output is 130 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.05 % total harmonic distortion.**

Other destination models

Music power
1 kHz, T.H.D. 10 %, 8Ω ..... 350 W + 350 W
Peak music power
L + R channels..... 1400 W
Total harmonic distortion **
20 Hz to 20 kHz, 130 W, 8Ω ..... 0.05 %
Input (Sensitivity/Impedance)
PHONO ..... 2.5 mV/50 kΩ
CD, VIDEO/AUX, TUNER,TAPE PLAY, ADAPTOR IN
..... 150 mV/50 kΩ
Phono Overload Level (T.H.D. 0.1 %, 1 kHz) ..... 100 mV
Output (Level/Impedance)
TAPE REC, ADAPTOR OUT ..... 150 mV/2.2 kΩ
Frequency Response
PHONO 20 Hz to 20 kHz (RIAA equalization)
U.S., Canadian, U.S. Military models ..... ±1 dB
Other destination models ..... ±2 dB
CD, VIDEO/AUX, TUNER, TAPE PLAY, ADAPTOR IN
10 Hz to 50 kHz, U.S., Canadian, U.S. Military models... ±3 dB
20 Hz to 50 kHz, Other destination models ..... ±3 dB
Muting..... −∞
Graphic equalizer
100 Hz ..... ±8 dB
330 Hz ..... ±8 dB
1 kHz ..... ±8 dB
3.3 kHz..... ±8 dB
10 kHz..... ±8 dB
Signal-to-Noise Ratio (IHF, Short circuited, A network)
U.S., Canadian, U.S. Military models
PHONO ..... 72 dB
CD, VIDEO/AUX, TUNER, TAPE PLAY, ADAPTOR IN..... 96 dB
Other destination models
PHONO ..... 66 dB
CD, VIDEO/AUX, TUNER, TAPE PLAY, ADAPTOR IN..... 92 dB

Miscellaneous

Power Requirements
U.S., Canadian models . . . . . AC 120 V, 60 Hz
Other destination models ... AC 110 V/120−127 V/220 V,240 V (Switchable), 50/60 Hz
Power Construction
U.S., Canadian models ..... 480 W (UL), 620 VA (CSA)
Other destination models ..... 690 W
Dimensions ..... 420 (W) x 170 (H) x 336 (D) mm
16-1/2 (W) x 6-11/16 (H) x 13-1/4 (D) in
Weight (without package) ..... 9.1 kg (19 lb 10 oz)

Furnished parts

Remote Control Unit 1
Batteries 2
Operating Instructions
(Stereo amplifer and tuner) 1
(Remote control unit)..... 1

NOTE:

- *Specifications and design subject to possible modification without notice due to improvements.*
- * *Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Claims for Amplifier.*
- ** *Measured by audio spectrum analyzer.*